

EPB**Smart Grid Project****Abstract**

EPB's Smart Grid project involves the installation of advanced metering systems and communications infrastructure. The project installs automated distribution grid equipment expected to enhance the reliability and quality of electric service delivery. The project implements two-way communications and metering expected to: 1) enable customers to view their energy consumption at their convenience through systems such as Web portals, 2) provide time-based rate programs to customers, 3) provide information and tools to improve outage management, and 4) reduce operations and maintenance costs.

Smart Grid Features

Communications infrastructure includes fiber optic systems that enable two-way communication between the meters, substations, and control office. This infrastructure also provides EPB with expanded capabilities and functionality to optimize energy delivery, system reliability, and customer service options.

Advanced metering infrastructure (AMI) includes 170,000 smart meters, providing AMI coverage for all EPB customers. The AMI deployment enables time-based rate programs and electric service options for interested customers. EPB expects lower operations costs from remote meter reading and more frequent identification of electricity theft. New AMI features such as outage and restoration notification and a remote service switch enable EPB to respond to outages and customer requests more efficiently.

Advanced electricity service options include a Web portal for all 170,000 customers, as well as in-home displays, energy management systems, and programmable communicating thermostats for up to 5,000 customers participating in a demand-response pilot. Information is being made available to all customers through a Web portal, which provides customers with account balance information and electricity usage information from their own smart meters. The in-home displays allow these customers to view similar account and usage information. Programmable communicating thermostats allow customers to better manage their central air conditioning and heating

At-A-Glance**Recipient:** EPB**State:** Tennessee, Georgia**NERC Region:** SERC Reliability Corporation**Total Budget:** \$226,707,562**Federal Share:** \$111,567,606**Project Type:** Integrated and Crosscutting Systems**Equipment**

- 170,000 Smart Meters
- AMI Communication Systems
 - Meter Communications Network
 - Backhaul Communications
- Customer Web Portal
- Up to 5,000 Direct Load Control Devices
- Up to 5,000 In-Home Displays/Energy Management Systems
- Up to 5,000 Programmable Communicating Thermostats
- Distribution System Automation/Upgrade for 164 out of 309 Circuits
 - SCADA Communications Network
 - Automated Distribution Circuit Switches*

*Including automation of existing motor operated switches at the sub-transmission level

Time-based Rate Programs Targeting up to 2,000 Customers

- Time of Use
- Critical Peak Pricing
- Peak Time Rebate

Key Targeted Benefits

- Reduced Electricity Costs for Customers
- Reduced Operating and Maintenance Costs
- Reduced Meter Reading Costs
- Increased Electric Service Reliability
- Reduced Costs from Distribution Line Losses, Equipment Failures, and Theft
- Reduced Truck Fleet Fuel Usage
- Reduced Greenhouse Gas and Criteria Pollutant Emissions

EPB (continued)

devices based on real-time electricity costs. EPB expects these information feedback systems to provide customers with greater control over their electricity costs.

Direct load control devices offered by the project include equipment for up to 5,000 customers participating in a demand-response pilot. These devices provide the utility with the ability to remotely manage and reduce peak demand while lowering customer electricity costs.

Time-based rate programs under consideration include critical peak pricing, peak time rebate, and time-of-use rates for customers receiving new smart meters. EPB intends the use of time-base rate programs, a Web portal, in-home displays, and advanced metering to provide customers the opportunity to shift their consumption from on- to off-peak periods. Customers can gain increased control over their electric costs.

Distribution automation systems include advanced automated equipment to improve the performance of its distribution equipment. This equipment includes automated feeder switches and sensor equipment for 164 distribution circuits in the EPB service territory. The distribution automation equipment helps to improve reliability and to reduce line losses and operations and maintenance costs. Distribution automation assists the integration and operations of distributed energy generation systems. The project also includes the automation of existing motor-operated switches on 61 sub-transmission circuits to improve system reliability. Supervisory control and data acquisition (SCADA) system replacement leverages Internet protocol-based fiber optic communications infrastructure to support expanded automation equipment installations and provide improved situational awareness for dispatch operators.

Timeline

Key Milestones	Target Dates
AMI/customer system asset deployment begins	Q1 2010
Distribution automation deployment begins	Q3 2010
AMI/customer system asset deployment ends	Q4 2012
Distribution automation deployment ends	Q4 2012
Data collection ends	Q4 2014

Contact Information

Rebecca Asher
Senior Internal Auditor
EPB
asherrd@epb.net

Recipient Team Web Site: www.EPB.net